SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Menno Dam, Hutchinson County
2102-F-21-R-48
2015

Figure 1. Menno Dam, Hutchinson County

Legal Description: T98N-R57W-Sec. 32
Location from nearest town: 1 mi. west, 1½ miles north, ½ mi. west of Menno, SD

Surface Area: 47 acres
Meandered (Y/N): no
OHWM elevation: no data
Outlet elevation: no data
Max. depth at outlet elevation: 34 feet
Observed water level: 10 feet low
Contour map available: yes

Watershed area: 14.4 square miles
Shoreline length: 1.5 miles
Date set: NA
Date set: NA
Mean depth at outlet elevation: 13 feet
Lake volume: no data
Date mapped: no data

DENR beneficial use classifications: (5) warmwater semipermanent fish propagation, (7) immersion recreation, (8) limited-contact recreation, (9) fish and wildlife propagation and stock watering

Introduction

General

The original Menno Lake was an artificial impoundment created by the construction of a dam across Furlong Creek by the Works Progress Administration (WPA) in 1936. The original dam was destroyed by flood waters in 1984. Reconstruction of the dam in a new location slightly downstream was completed in 1995 and fisheries management resumed in 1996.

Ownership of Lake and Adjacent Lakeshore Properties

The State of South Dakota owns Menno Dam, and the fishery is managed by the Department of Game, Fish and Parks (GFP). GFP owns some land on the south side of the lake but the rest of the shoreline is privately owned. To allow recreational access, GFP has a 15-foot easement above the Ordinary High Water Mark around the privately owned shoreline.

Fishing Access

The Menno Dam Access Area contains a boat ramp with a dock and a public toilet. The Lake Menno Association manages a small campground that has camper hookups and a picnic shelter. Shore fishing opportunities are abundant. The entire lake has been designated as a no-wake zone. At no time can boats exceed 5 mph or produce a visible wake.

Water Quality and Aquatic Habitat

Water quality was described as poor in 2015 and the Secchi depth measurement was only 48 cm (19 in) (Table 1). The water level in the lake was also very low. However, the survey crew observed sago pondweed, duckweed and bulrushes during the survey. It was also noted that a considerable amount of terrestrial vegetation was growing on the exposed lake shore.

Table 1. Water temperature, Secchi depth and observations/comments on water quality and aquatic vegetation in Menno Dam, Hutchinson County, 2006-2015.

Year	*Water Temp °C (°F)*	*Secchi Depth cm (in)*	*Observations/Comments (algae, aquatic vegetation, water quality, etc.)*
2015	24 (75)	48 (19)	Sago, algae and bulrushes
2014	26 (78)	81 (32)	Sago pondweed
2013	26 (79)	69 (27)	No observations were recorded
2011	24 (75)	61 (24)	Sago pondweed
2009	19 (66)	100 (39)	Green algae and sago pondweed
2007	24 (76)	91 (36)	Bulrush, sago and baby pondweed

Fish Community

Menno Lake supports a fish community typical of southeastern South Dakota impoundments (Table 2). The lake contains a variety of panfish including largemouth bass, bluegill, black crappie, green sunfish and yellow perch. Panfish abundance varies substantially from year to year. The lake also has channel catfish and black bullheads. Several summer fish kills have been documented at Marindahl Lake (Table 3).

Table 2. Fish species commonly found in Menno Dam, Hutchinson County.

Game Species	*Other Species*
Largemouth Bass Bluegill Black Crappie Channel Catfish Black Bullhead Yellow Perch Green Sunfish	White Sucker

Fish Management

GFP manages Menno Lake for largemouth bass, bluegill and channel catfish. Bluegills grow relatively slowly, but do obtain a size desirable to anglers and provide a fishery. Natural reproduction maintains a high abundance of largemouth bass, especially for eastern South Dakota. Channel catfish have been stocked to provide additional fishing opportunities (Table 4).

Table 3. Fish kill history for Menno Dam, Hutchinson County.

Year	*Severity*	*Comments*
2015		Bluegill, largemouth bass and channel catfish summerkill
2008	Moderate	Summer bluegill mortality caused by parasites
2007	Light	Summer kill of small crappies caused by parasites

Table 4. Stocking history for Menno Dam, HutchinsonCounty, 2006-2015.

Year	*Number*	*Species*	*Size*
2006	95	Largemouth Bass	Adult
	50	Channel Catfish	Adult
2013	4,950	Channel Catfish	Fingerling

Methods

Menno Dam was sampled on August 31-September 2, 2015 with ten overnight trap net sets. The trap nets were constructed with 19-mm-bar-mesh (3/4 in) netting, 0.9 m high x 1.5 m wide (3 ft high x 5 ft wide) frames and 18.3 m (60 ft) long leads. One hour and twenty minutes of electrofishing was done on June 3, 2015 to sample the largemouth bass population.

Results and Discussion

Net Catch Results

Bluegill, black crappie and black bullhead were the most abundant species sampled in the trap nets (Table 4). Largemouth bass, white sucker, green sunfish, channel catfish and yellow perch were also caught (Table 4).

Table 4. Total catch from ten overnight trap nets set in Menno Dam, Hutchinson County, August 31-September 2, 2015.

Species	*#*	*%*	*CPUE*	*80% C.I.*	*Mean CPUE**	*PSD*	*RSD-P*	*Mean Wr*
Bluegill	137	40.2	13.7	±5.5	42.7	100	91	103
Black Crappie	133	39.0	13.3	±4.1	22.6	89	71	99
Black Bullhead	33	9.7	3.3	±1.6	6.7	88	84	--
Largemouth Bass	24	7.0	2.4	±1.4	2.3	--	--	--
White Sucker	9	2.6	0.9	±0.8	0.8	--	--	--
Green Sunfish	3	0.9	0.3	±0.4	0.2	--	--	--
Channel Catfish	1	0.3	0.1	±0.1	0.1	--	--	--
Yellow Perch	1	0.3	0.1	±0.1	1.2	--	--	--

*10 years (2006-2015)

Table 5. CPUE by length category for selected species sampled with trap nets in Menno Dam, Hutchinson County, August 31-September 2, 2015.

Species	*Substock*	*Stock*	*S-Q*	*Q-P*	*P+*	*All sizes*	*80% C.I.*
Bluegill	--	13.7	--	1.3	12.4	13.7	±5.5
Black Crappie	--	13.3	1.5	2.4	9.4	13.3	±4.1
Black Bullhead	0.1	3.2	0.4	0.1	2.7	3.3	±1.6
Largemouth Bass	2.2	0.2	0.2	--	--	2.4	±1.4
White Sucker	--	0.9	--	--	0.9	0.9	±0.8
Green Sunfish	--	0.3	0.3	--	--	0.3	±0.4
Channel Catfish	--	0.1	--	0.1	--	0.1	±0.1
Yellow Perch	--	0.1	--	0.1	--	0.1	±0.1

Length categories can be found in Appendix A.

Table 6. Trap-net CPUE for all fish species sampled in Menno Dam, Hutchinson County, 2006-2015.

Species	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Black Bullhead		7.8		10.4		5.0		10.8	3.0	3.3
Black Crappie		32.4		4.5		37.6		20.6	27.0	13.3
Bluegill		23.3		43.1		105.8		43.0	27.2	13.7
Channel Catfish		0.1		0.1		--		--	0.2	0.1
Green Sunfish		0.5		--		0.2		--	--	0.3
Hybrid Sunfish		0.1		1.3		0.1		--	--	--
Largemouth Bass		--		0.3		0.2		2.4	8.6	2.4
White Sucker		0.4		1.3		0.8		1.2	0.4	0.9
Yellow Perch		--		2.6		1.9		1.9	0.4	0.1

Largemouth Bass

Management Objective

- Maintain a largemouth bass population with an electrofishing CPUE of at least 20.

Management Strategy

- Stock hatchery-reared large fingerlings in the spring if electrofishing CPUE falls below the management objective.

Largemouth bass electrofishing CPH increased to 560.1 in 2015 with the recruitment of an exceptionally large 2014 year class. These 2014 fish were 9-13 cm (3.5-5 in) long or substock in length. CPUE of preferred-length and longer bass was similar to 2014 (Figure 3).

Table 7. Largemouth bass electrofishing CPH, PSD, RSD-P, and mean Wr for Menno Dam, Hutchinson County, 2006-2015.

	2006	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***
CPUE		71.0		51.0		113.3		84.0	51.1	560.1
PSD		41		52		68		86	100	--
RSD-P		7		27		37		61	69	--
Mean Wr		97		107		104		100	91	--

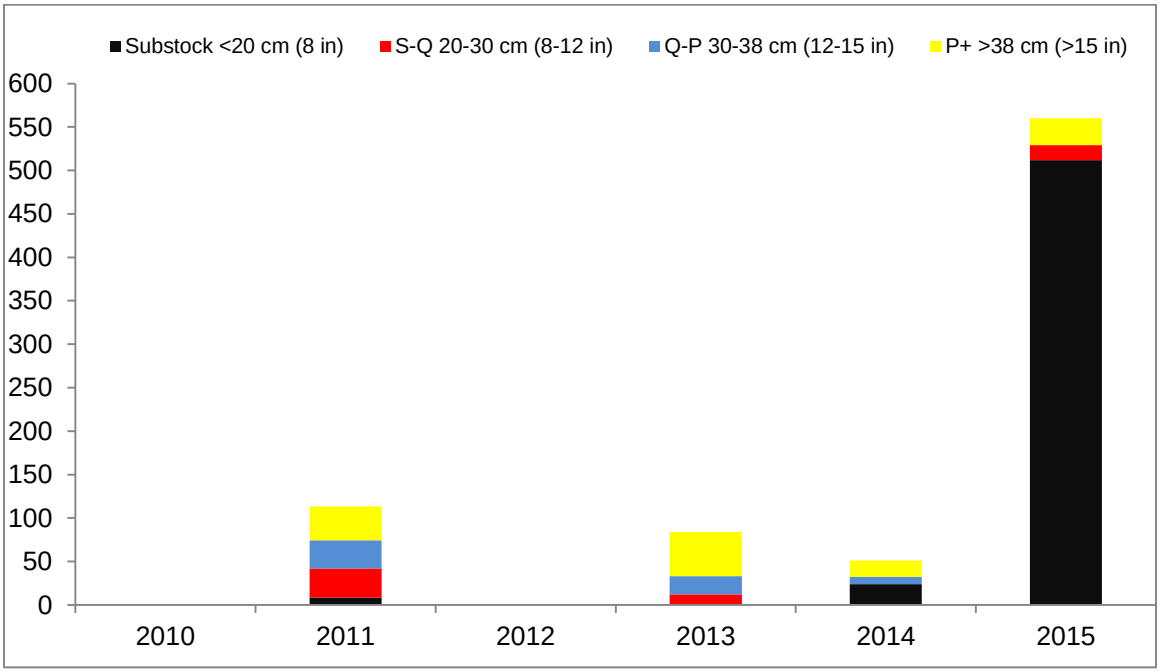

Figure 2. CPUE by length category for largemouth bass sampled by electrofishing in Menno Dam, Hutchinson County, 2010-2015.

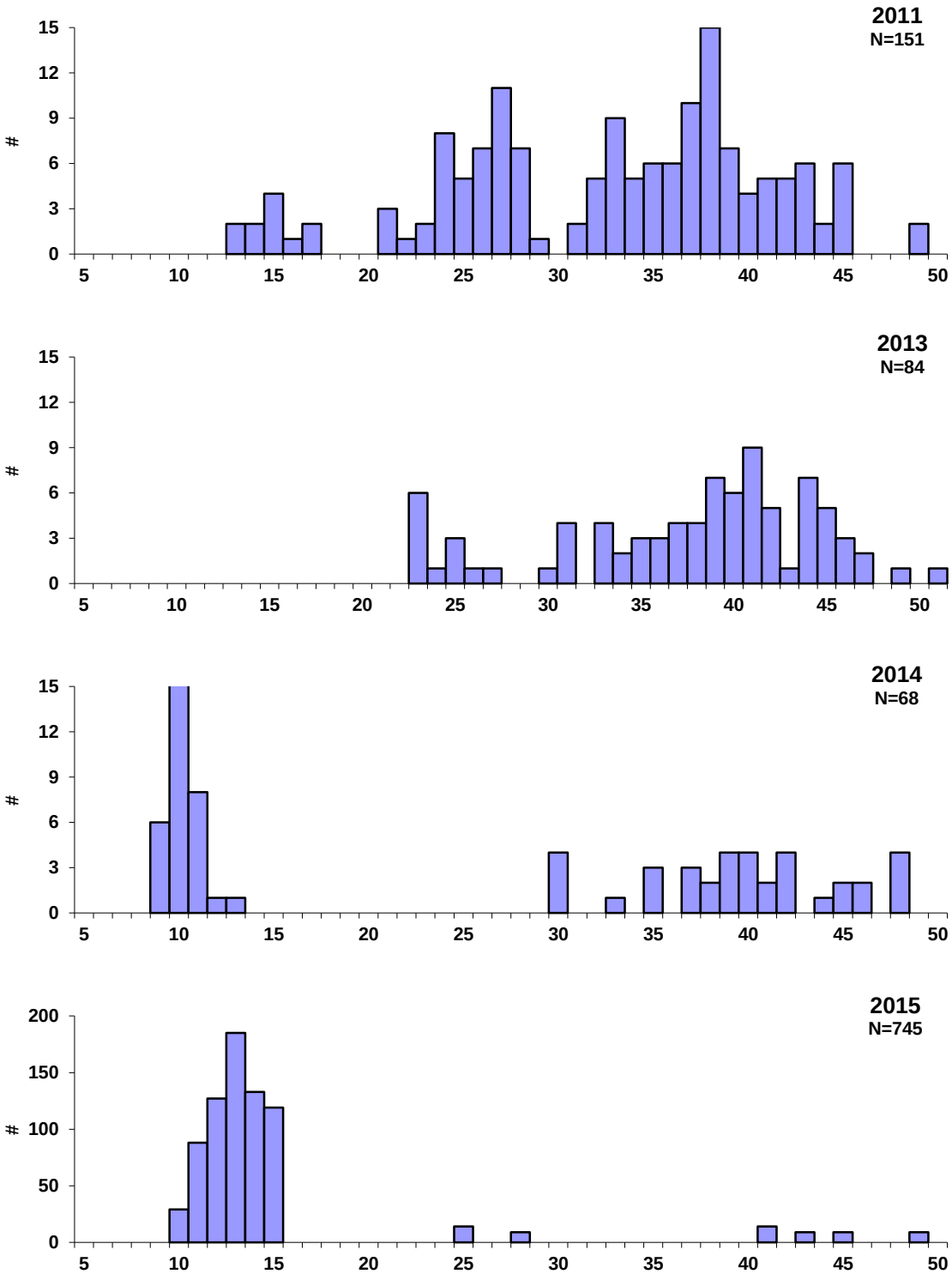

Figure 3. Length frequency histograms for largemouth bass sampled by electrofishing in Menno Dam, Hutchinson County, 2011, 2013-2015.

Bluegill

Management Objective

- Maintain a bluegill population with a total trap-net CPUE of 25-50 and RSD-18 of at least 20.

Management Strategy

- Conduct annual trap net surveys to monitor the population.

Bluegill trap net CPUE dropped to 13.7 and is now below the management objective (Table 8). The sample was comprised almost entirely of fish 20 cm (8 in) and longer (Figures 4,5). The sampled fish were in good condition (Table 8), but there has been little natural recruitment since 2010 (Figure 5).

Table 8. Bluegill trap-net CPUE, PSD, RSD-18, RSD-P, and mean Wr for Menno Dam, Hutchinson County, 2006-2015.

	2006	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***
CPUE		23.3		43.1		105.8		43.0	27.2	13.7
PSD		24		91		66		95	100	100
RSD-18		3		40		27		23	93	100
RSD-P		2		3		1		2	50	91
Mean Wr		91		104		88		80	120	103

Table 9. Average back-calculated lengths (mm) for each age class of bluegill in Menno Dam, Hutchinson County, 2015.

			Back-calculation Age							
Year Class	***Age***	***N***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***
2011	4	19	47	105	146	186				
2010	5	24	48	85	129	175	206			
2009	6	83	43	78	109	143	177	207		
2008	7	11	38	95	123	157	189	200	210	
All Classes		**137**	**44**	**91**	**127**	**165**	**191**	**204**	**210**	
Statewide Mean			55	103	141	166				
Region III Mean			60	116	157	180				
SLI* Mean			53	101	138	163				

* Small Lakes and Impoundments

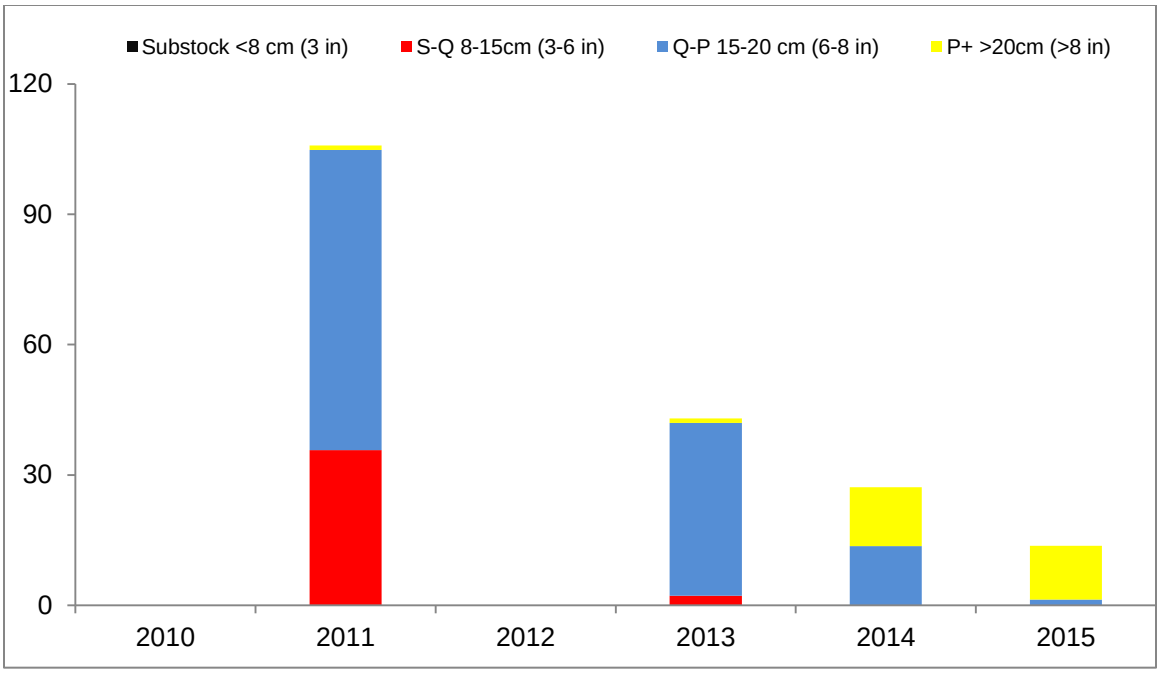

Figure 4. CPUE by length category for bluegill sampled with trap nets in Menno Dam, Hutchinson County, 2010-2015.

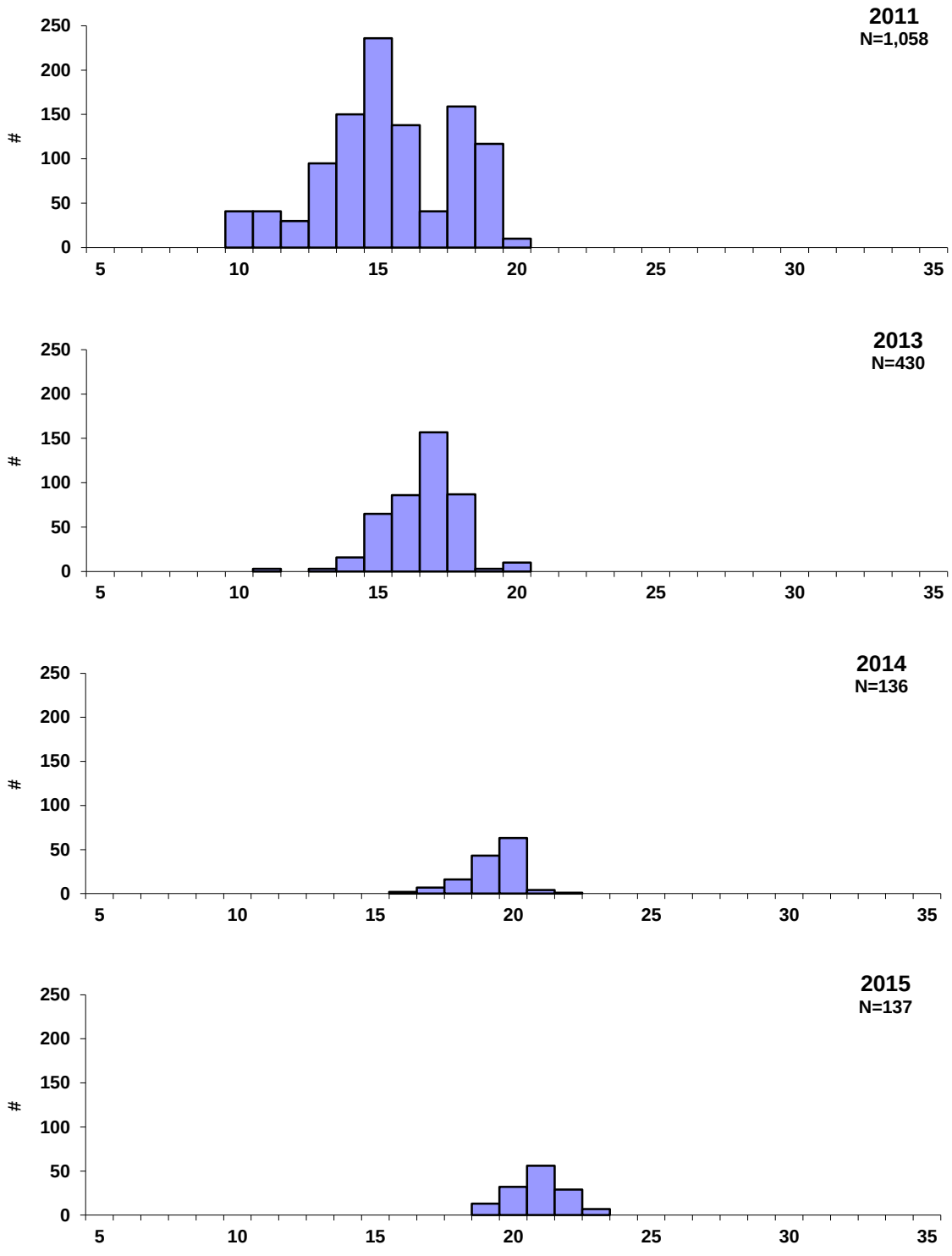

Figure 5. Length frequency histograms for bluegill sampled with trap nets in Menno Dam, Hutchinson County, 2011, 2013, 2014 and 2015.

Black Crappie

Management Objective

- Maintain a black crappie population with a total trap-net CPUE of 20-30 and PSD of at least 40.

Management Strategy

- Conduct annual trap net surveys to monitor the population.

Like bluegill, black crappie trap-net CPUE dropped below the management objective (Tables 10 and 11). Although crappie growth is usually slow in Menno, a substantial proportion of the current population is 25 cm (10 in) and longer (Figures 6,7). A few small crappies were present indicating limited natural recruitment (Figure 7).

Table 10. CPUE, PSD, RSD-P, and mean Wr for all black crappie sampled with trap nets in Menno Dam, Hutchinson County, 2006-2015.

	2006	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***
CPUE		32.4		4.5		37.6		20.6	27.0	13.3
PSD		75		56		48		40	100	89
RSD-23		12		0		16		2	96	87
RSD-P		1		0		3		0	18	71
Mean Wr		102		111		96		85	106	99

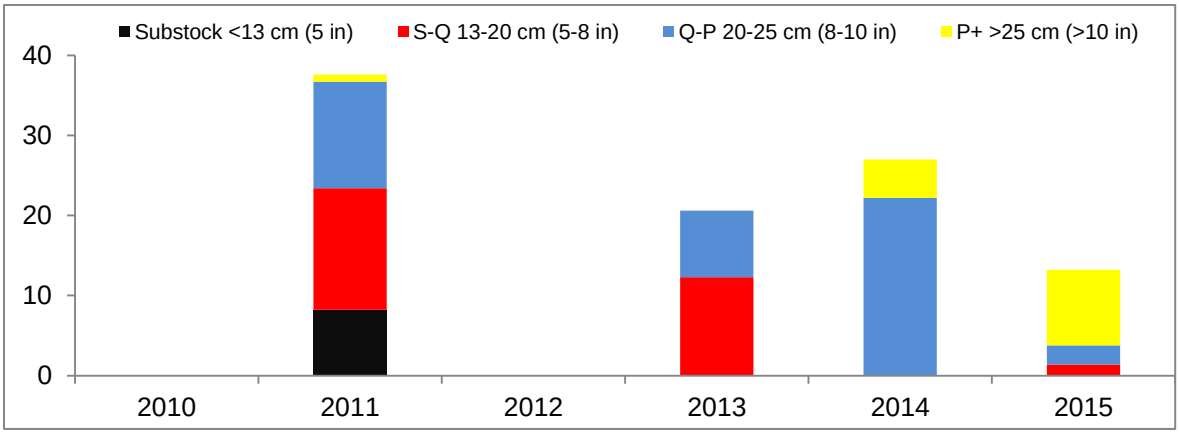

Figure 6. CPUE by length category for black crappies sampled with trap nets in Menno Dam, Hutchinson County, 2010-2015.

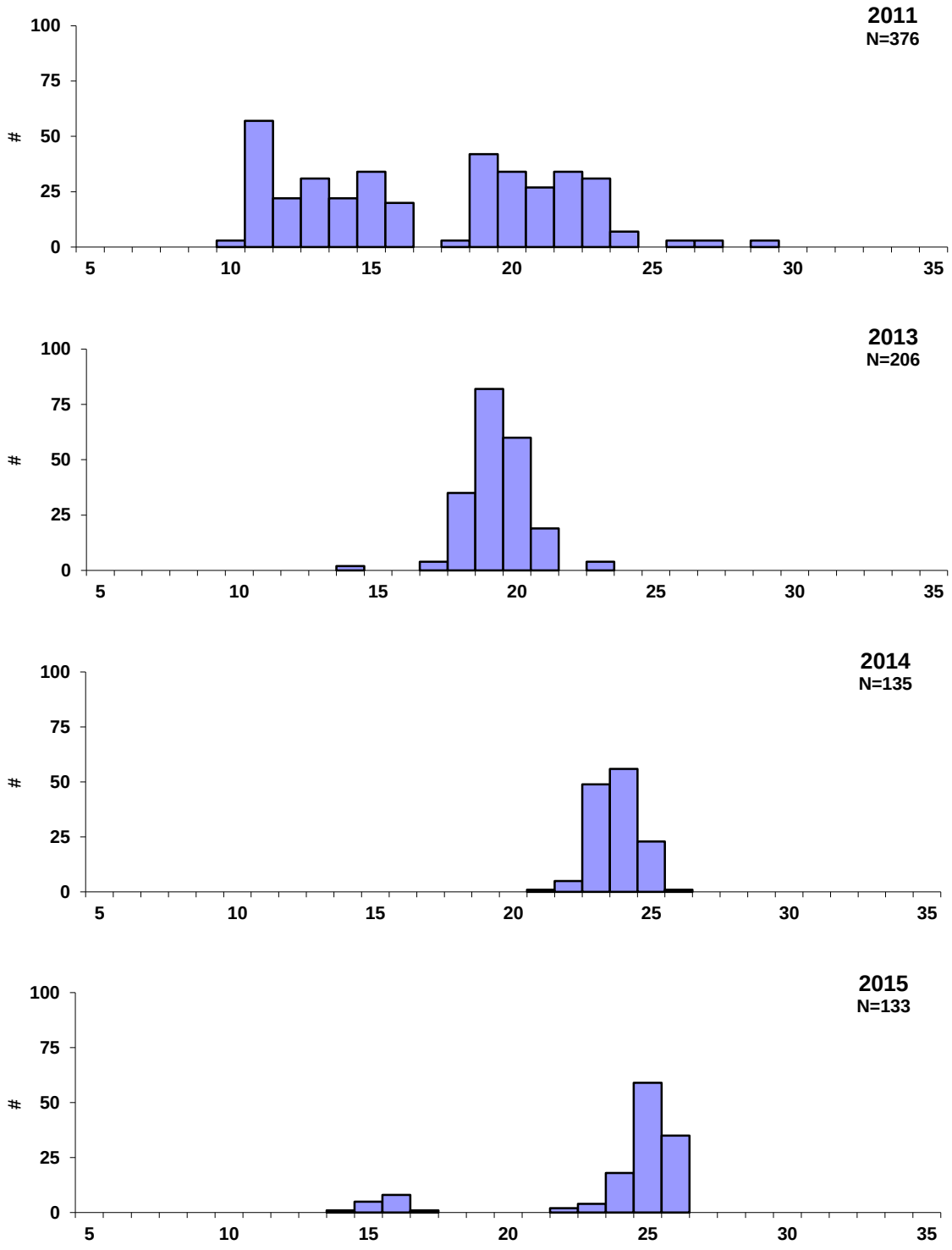

Figure 7. Length frequency histograms for black crappie sampled with trap nets in Menno Dam, Hutchinson County, 2011, 2013, 2014 and 2015.

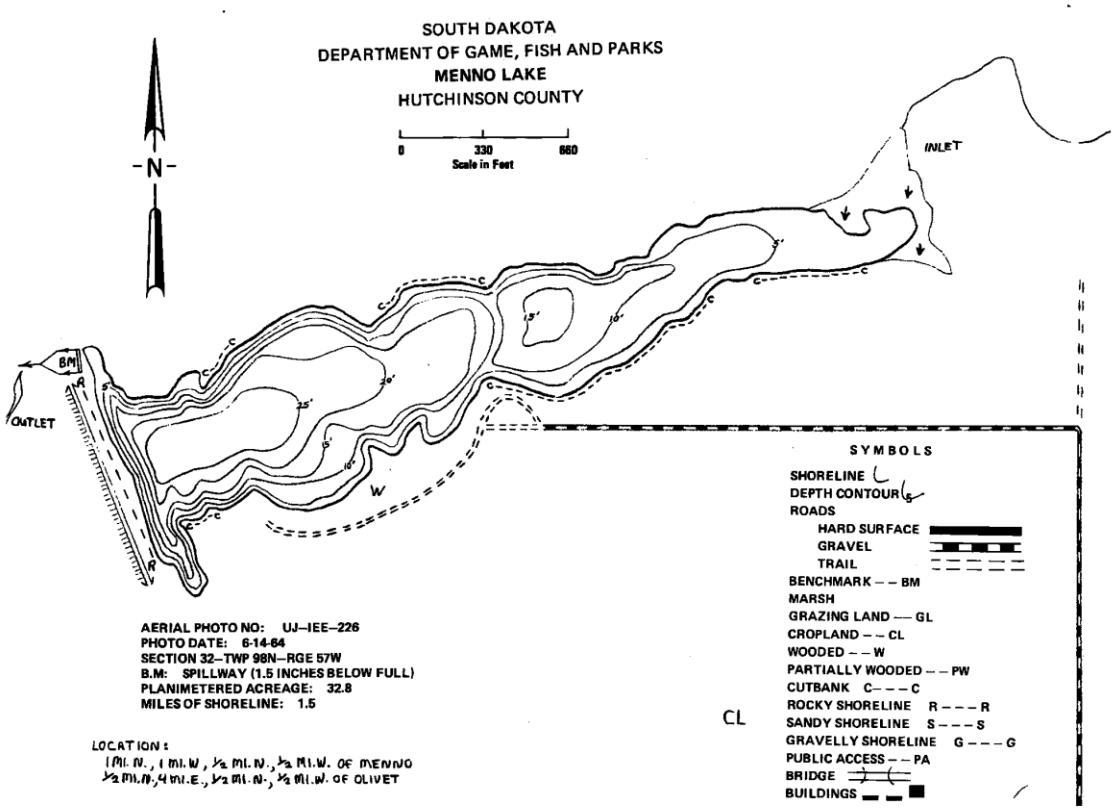

Figure 8. Contour map of Menno Dam, Hutchinson County.

Appendix A. A brief explanation of catch per unit effort (CPUE), proportional stock density (PSD), relative stock density (RSD) and relative weight (Wr).

Catch per Unit Effort (CPUE) is the catch of animals in numbers or in weight taken by a defined period of effort. Can refer to trap-net nights of effort, gill net nights of effort, catch per hour of electrofishing, etc.

Proportional Stock Density (PSD) is calculated by the following formula:

$$PSD = \frac{\text{Number of fish} > \text{quality length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

Relative Stock Density (RSD-P) is calculated by the following formula:

$$RSD\text{-}P = \frac{\text{Number of fish} > \text{preferred length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

PSD and RSD-P are unitless and usually calculated to the nearest whole digit.

Size categories for selected species found in Region 3 lake surveys, in centimeters (Inches in parenthesis).

Species	Stock	Quality	Preferred	Memorable	Trophy
Walleye	25 (10)	38 (15)	51 (20)	63 (25)	76 (30)
Yellow perch	13 (5)	20 (8)	25 (10)	30 (12)	38 (15)
Black crappie	13 (5)	20 (8)	25(10)	30 (12)	38 (15)
White crappie	13 (5)	20 (8)	25(10)	30 (12)	38 (15)
Bluegill	8 (3)	15 (6)	20 (8)	25 (10)	30 (12)
Largemouth bass	20 (8)	30 (12)	38 (15)	51 (20)	63 (25)
Smallmouth bass	18 (7)	28 (11)	35(14)	43 (17)	51 (20)
Northern pike	35 (14)	53 (21)	71 (28)	86 (34)	112 (44)
Channel catfish	28 (11)	41 (16)	61 (24)	71 (28)	91 (36)
Black bullhead	15 (6)	23 (9)	30 (12)	38 (15)	46 (18)
Common carp	28 (11)	41 (16)	53 (21)	66 (26)	84 (33)
Bigmouth buffalo	28 (11)	41 (16)	53 (21)	66 (26)	84 (33)

For most fish, 30-60 or 40-70 are typical objective ranges for “balanced” populations. Values less than the objective range indicate a population dominated by small fish while values greater than the objective range indicate a population comprised mainly of large fish.

Relative weight (Wr) is a condition index that quantifies fish condition (i.e., how much does a fish weigh for its length). A Wr range of 90-100 is a typical objective for most fish species. When mean Wr values are well below 100 for a size group, problems may exist in food and feeding relationships. When mean Wr values are well above 100 for a size group, fish may not be making the best use of available prey.